CLAIMS

1 - Arrangement of motorised floating mobile systems (7 ; 107 ; 207) for moving mooring booms (4A to 4E) of boats B and floating vessels in inner harbours P, in order to translationally move said booms (4A to 4E) along a trajectory perpendicular thereto, in such a way that a manoeuvring space of boats B and floating vessels can be provided between at least two adjacent booms (4 ; 4A to 4E), whereas the other spaces between booms are closed for manoeuvring, each system including :

- means (5) for fixing booms or sections thereof, which are disposed in a perpendicular direction to the translation direction ;
- means (9, 10) which are arranged on the two ends of the system and enable said system to be attached to an identical system in the front thereof or to an attaching means arranged on the end of a pier or a fixed boom ;
- means for translationally guiding in a direction parallel to a pier or a main pontoon, with respect to a fixed point consisting of a pile or dolphin (8) or group of piles or dolphins driven into the bottom of the inner harbour, said fixed points of said arrangement being provided to be positioned following a regular grid pattern whose axes are perpendicular and parallel to said pier or main pontoon and which has a mesh size suitable to allow the abovementioned manoeuvring of a boom or a group of adjacent booms attached by their ends, with some systems (107) being adapted to be guided by a fixed pontoon (3) ; and
- means which translationally move the booms, said arrangement moving means being controlled by means for synchronously controlling said manoeuvring.

2 - Arrangement according to claim 1, characterized in that the ends of the floating mobile systems support mooring means so as to form mooring arms.

3 - Arrangement according to claim 1 or 2, characterized in that the systems are disposed so that in a stop position, they are always, at one end, in abutment with a pile or dolphin (8), and, at the other, locked on the end of a facing identical system or on the end of a pontoon or fixed pier, the ends of said identical system or said fixed pontoon being themselves in abutment with another pile or dolphin (8).

4 - Arrangement according to anyone of claims 1 to 3, characterized in that the means (9, 10) provided for attaching and disconnecting two adjacent booms are disposed to ensure a link adapted to withstand bad weather conditions and follow water movements and the tides.

5 - Arrangement according to anyone of claims 1 to 4, characterized in that the means for translationally guiding a floating mobile system consists of a carriage (12) surrounding a dolphin (8) forming a slide able to go up and down along the dolphin (8) to follow water movements or the tides, said carriage externally comprising rolling devices (24, 25) adapted to cooperate with rails (11A, 11'A) of the floating mobile system.

6 - Arrangement according to claim 5, characterized in that each floating mobile system (7) is driven by at least one cable (21) connected to the carriage (12) at both opposite edges (12A, 12B) thereof perpendicular to rails (11A, 11'A), and likely to be drawn by a motor (19) so that the traction of a cable connected to one edge allows the floating mobile structure to slide in the direction opposite to the traction exerted by the cable.

7 - Arrangement according to claim 5, characterized in that a motor (19) embedded on the carriage (12) puts in motion one or more toothed wheels (45) which move on one or two rack-rails (36), so that this movement

involves the displacement of the floating mobile system in one direction or in the other.

8 - Arrangement according to anyone of claims 5 to 7, characterized in that a floating mobile system includes an elongated support structure with two facing beams (11, 11') carrying internally the rails (11A, 11'A) provided to cooperate with the rolling devices (24, 25) of the carriage (12) of the dolphin (8), said beams (11, 11') being joined at their ends by bonding structures (13B, 13C), said beams and, when applicable, the bonding structures, being supported by at least a flotation device (F, F1), means (18, 18') being supported by said beams allowing their connection to the boom or boom sections, with possible reinforcement uprightly from said connection by triangulation rams (17), the ends of said structure having complementary attaching means to means supported by the structure of the adjacent floating mobile system, in order to constitute trains of floating mobile systems in the attached positions of the systems concerned.

9 - Arrangement according to claim 8, characterized in that the two spaces between the two rails (11A, 11'A) from either side of the carriage (12) associated with the dolphin (8) are closed by a grating (16A, 16B) which winds and unwinds from either side of the carriage depending on the displacement of the floating mobile system with respect to the dolphin (8), a flooring (15) allowing the users float traffic covering the structure around the grating.

10 - Arrangement according to claim 9, characterized in that means are provided to allow the winding or the unwinding of one of the gratings at a speed depending on the unwinding or the winding of the other grating.

11 - Arrangement according to claim 10, characterized in that winding/unwinding means of a grating with respect to the other one consists of at least one chain (40) whose length and thickness are proportional

respectively to the length and thickness of the windable grating and mounted to wind around the winding axis of the first grating in a direction opposite to the winding direction thereof and on the parallel axis of the second grating also in the direction opposite to the winding direction thereof, so that, when the first grating is fully wound on its axis, the chain (40) is completely unwound on this same axis and is completely wound on said second axis, whereas the second grating is completely unwound, said chain being driven by the unwinding of the first grating, itself driven by the motor moving the structure.

12 - Arrangement according to claim 8, characterized in that the protection of the central opening of the systems is provided by a guardrail (G) positioned around the translation area of the dolphin (8), a passage area in the axis of the boom sections being arranged thanks to a liftable walkway (16C, 16D).

13 - Arrangement according to anyone of claims 8 to 12, characterized in that between the two rails (11A, 11'A), are disposed maintaining braces (14), said braces being arranged to disappear when the displacement of the structure leads them in the vicinity of the carriage edges (12A, 12B) and being adapted to be used as support to a traction cable.

14 - Arrangement according to anyone of the claims 1 to 13, characterized in that each boom comprises several mooring pontoon sections connected to the floating mobile systems (7a, 7b, 7c, 7d), being completed by a floating mobile system (107a, 107b, 107c, 107d) named pier system, adapted to slide along a conventional fixed floating pontoon (3) and by a floating mobile system, named head system (207a, 207b, 207c, 207d), located at the opposite end of the boom, on the boat side, and being adapted to be used as a waiting pontoon.

15 - Arrangement according to anyone of the claims 1 to 11, characterized in that the connection between the booms or boom sections and the mobile systems

is performed at a level selected to allow, on either side of the boom, two equal or different lengths, depending on the needs, of location for the boats B and floating vessels.

16 - Arrangement according to anyone of the claims 5 to 15, characterized in that each fixed point is formed by several dolphins whose associated carriages are connected by an hinged bonding device.

17 - Port installation comprising booms adapted to move by the arrangement of motorised floating mobile systems such as defined in anyone of the claims 1 to 16.